

Smith, George

From: Jason Gorrie <jason@jmg-eng.com>
Sent: Monday, August 28, 2023 1:15 PM
To: SWD_Waste
Subject: Pasco County Class III Landfill - Remaining Useful Life Estimate
Attachments: 2022 Class III remaining life estimate_8_28_2023.pdf

EXTERNAL MESSAGE

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Pasco County Utilities

Remaining Disposal Capacity and Site Life Calculations West Pasco Class III Landfill

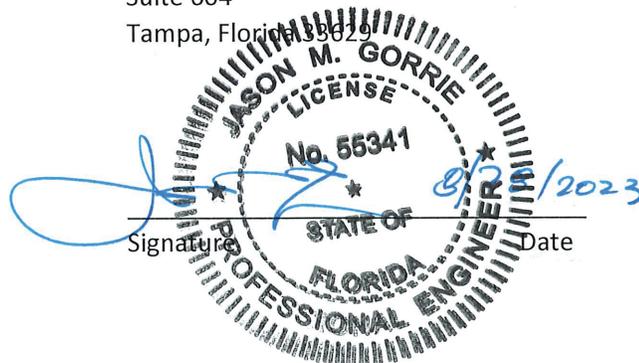
Reporting Year 2022

July 2023



Prepared For:
Pasco County Utilities

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Purpose of Report

Rule 62-701.500(13)(c) of the Florida Administrative Code (FAC) requires landfill owners and operators to annually prepare an estimate of the remaining life and capacity (in cubic yards) of the existing, constructed landfill and an annual estimate of the life and capacity of other permitted areas not yet constructed. For the purposes of this report, the “existing, constructed landfill” is considered to be the currently active portions of the site designated as Class III (subcells 1, 2, 3, and 4 of 4). The Class I portions of the West Pasco Resource Recovery Facility Landfill are addressed in a separate Report.

Procedure

The currently permitted capacity of the Class III Landfill is considered to be 422,000 cubic yards¹. In order to estimate the current volume of waste in place in subcells 1, 2, 3, and 4 the Pasco County Engineering Services Department conducted a topographic survey of Class III landfill in January 2023. The topographic contours identified through the survey are included as **Attachment 1**.

Using the elevations reported on the topographic survey in conjunction with the assumed elevations of the liner system, it is possible to estimate the volume of waste in place in the landfill. Mathematically, the volume under a function is defined by the double integral:

$$\int_{x-\min}^{x-\max} \int_{y-\min}^{y-\max} f(x, y) dx dy$$

To determine the function $f(x, y)$ defining the shape of the landfill surfaces, JMG Engineering relied upon the volume calculation algorithms of the surface mapping software program Autodesk Civil 3D. The total volume of waste calculated to be currently in place in the Class III Landfill is approximately 272,000 cubic yards.

Given the permitted volumetric capacity of 422,000 cubic yards and subtracting the 272,000 cubic yards calculated from the January 2023 survey to be currently in place, approximately 150,000 cubic yards of airspace remains available for disposal. Compacted construction and demolition debris waste has an approximate density of 1,200 pounds per cubic yard. Using the assumed density, the 150,000 remaining cubic yards can accommodate approximately 90,000 tons of construction and demolition debris.

As shown in Table 1, the Class III waste disposal rate has varied from year to year. However, because the tipping fee charged by Pasco County to use the Class III cells is considerably higher than that of nearby private Class III landfills, it is safe to assume that the annual waste placement rate will not differ significantly from approximately 4,000 tons/year (6,667 cubic yards/year). Using this as a future disposal rate along with an estimated 10% weekly cover rate (667 cubic yards/year) results in an estimated future airspace consumption rate of 7,333 cubic yards per year. Dividing the remaining airspace of

¹ Previous useful life estimates assumed 487,904 cubic yards of available capacity. A recalculation using the dimensions from the 1989 Construction Drawings using Autocad Civil 3D suggests that the available capacity is actually 422,000 cubic yards.

150,000 cubic yards by the estimated future consumption rate of 7,333 cubic yards per year results in **an estimated remaining life of 20 years.**

TABLE 1
Monthly Tonnage Summary for 2022

Month	West Pasco Class III (tons)
January	372
February	453
March	561
April	458
May	409
June	444
July	362
August	365
September	371
October	443
November	369
December	335
Total	4,942

Historical Tonnage Summary

2012	2,822
2013	3,206
2014	4,433
2015	4,125
2016	3,094
2017	3,227
2018	3,114
2019	3,896
2020	4,149
2021	4,867

Attachments

Attachment 1: Topographical Contours

Attachment 2: Volume Calculation Report

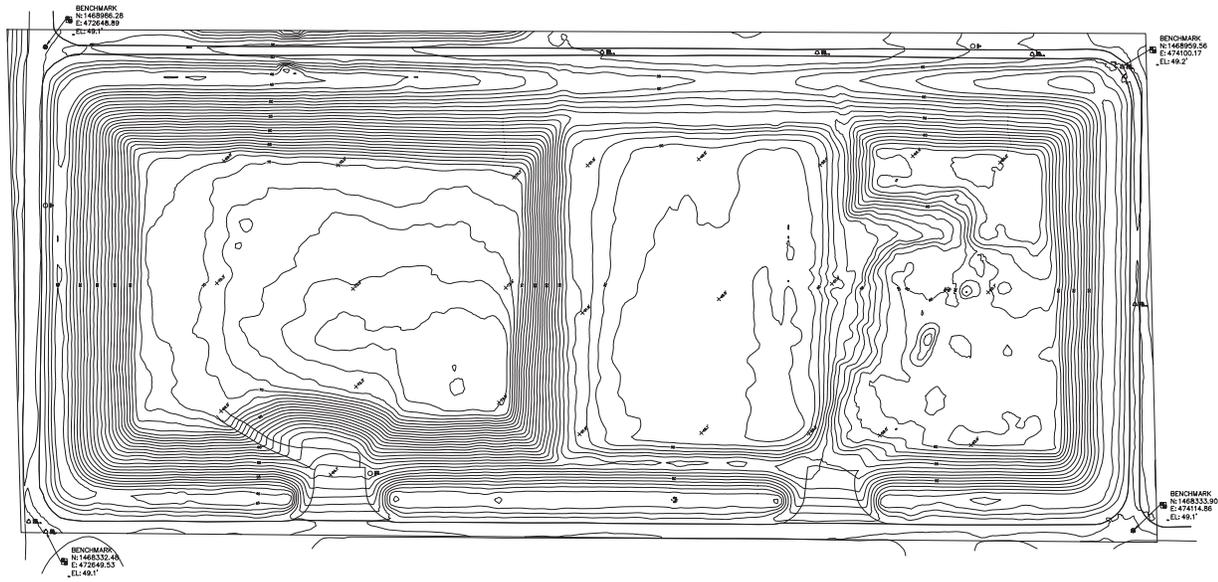
ATTACHMENT 1
Landfill Contours

SURVEYOR'S NOTES:

1. Use of this survey for purposes other than intended, without written verification, will be at the user's sole risk and without liability to the surveyor. Nothing herein shall be construed to give any rights or benefits to anyone other than those certified to. This survey meets the "Standards of Practice" set forth by the Florida Board of Land Surveyors in Chapter 51-17 Florida Administrative Code.
2. This survey was prepared without an abstract of title; therefore the undersigned makes no guarantee or representations regarding information shown hereon pertaining to easements, rights-of-way, setback lines, agreements, reservations, or other similar matters.
3. No instruments of record reflecting easements, right-of-ways and/or ownership were furnished to the undersigned except as shown.
4. No underground installations, improvements or encroachments, have been located except those shown hereon.
5. Elevations shown hereon are based upon North American Vertical Datum of 1988 (NAVD88), National Geodetic Survey benchmark "C 875", located at Hays Road, published elevation = 48.47' (NAVD88).
6. Coordinates shown hereon are referenced to the Florida State Plane Coordinate System, T1-West projection.
7. Topographic Data shown hereon was surveyed via aerial L.I.D.A.R. scan provided by Bowman Consulting Services, project No. 000304-01-002



- LEGEND**
- = 5/8" CAPED BENCH ROD
 - = PIN NAIL & DISC
 - = METEAL CONTROL BENCHMARK
 - = SPOT ELEVATION



DATE		REGION		DATE OF FIELD SURVEY	2/27/2012
BY					
Topographic Survey Pasco County Solid Waste Department Pasco Waste, Area 1 PROJECT NO: 2010-03-0001-BROOD001 SHEET NO: 1 of 3 TWP: 24 S. R. 16 E. COUNTY: Pasco					

ATTACHMENT 2
Civil 3D® Cut/Fill Report

Cut/Fill Report

Generated: 2023-07-24 11:45:43
By user: JasonGorrie
Drawing: D:\OneDrive - JMG Engineering\Pasco\Compliance Assistance (2-23)\Landfill Useful Life\D:\OneDrive - JMG Engineering\Pasco\Compliance Assistance (2-23)\Landfill Useful Life\survey file - JMG working file.dwg

Volume Summary							
Name	Type	Cut Factor	Fill Factor	2d Area (Sq. Ft.)	Cut (Cu. Yd.)	Fill (Cu. Yd.)	Net (Cu. Yd.)
CLASS III VOLUME (1)	full	1.000	1.000	782266.88	7113.99	279125.69	272011.70<Fill>

Totals					
		2d Area (Sq. Ft.)	Cut (Cu. Yd.)	Fill (Cu. Yd.)	Net (Cu. Yd.)
Total		782266.88	7113.99	279125.69	272011.70<Fill>

* Value adjusted by cut or fill factor other than 1.0